Pipeline Construction – Issues Observed & How to Prevent Reoccurrence

Safety MUST be our Culture!!

Agenda

- Introduction/Purpose of why we are here today &VGOA support (Dan Cote and Robert Duvall)
- OQ
- Expectations for participation
- Pipeline Safety Accidents
- Repetitive construction issues observed
- Safety culture in construction-How do we address this?
- Create and complete a roadmap for a Safety Stand Down Day

VGOA Support

-Dan Cote – Vice President of Pipeline Safety and Compliance Columbia Gas of Virginia

-Robert Duvall – Vice President of Operations Virginia Natural Gas

Purpose of Today

-We continue to see the same issues over and over, year after year with the same explanations as to why they occur.

-By the end of today, we will define and create a roadmap that each Company and contractor will use to hold a Safety Stand Down Day and present it to the rest of the conference Thursday.

Focus on Safety?

- Companies know how many lost time hours due to “on the job” injuries they have and closely track other OHSA and personal safety performance measures

- Companies have policies about vehicle accidents – some will terminate employees after 2 avoidable accidents, some require employees to meet with management groups that include the president of the company

Purpose of Today

-Staff has found that on any given day, there are approximately 270 crews performing natural gas construction activities in the state, including SAVE Projects, renewals, and new construction.

-In 2011-2012 approximately 20,000 services and 250 miles of main

-Staff completed 2500 construction inspections over the past 18 months.

Root Cause

-Is it training and qualification?

-Is it culture?

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Operator Qualifications

Our findings included:

- A number of plans had not been updated for new processes or procedures.
- Some plans contained outdated information from 2004 or prior.
- Some referenced equipment not even in use by the operator.
- Many contained over-simplified testing materials that did not adequately evaluate knowledge or skill sets.

Operator Qualifications

-Our investigation found that, in certain cases, individuals could be “requalified” to perform an OQ task in less than 15 minutes.

-We also found that some companies allowed individuals failing a test to retake them immediately until they passed.

Operator Qualifications

-For our purpose today, all employees are assumed to be properly qualified under the new OQ Program.

-If an issue is found, there will be one of two categories of employees involved:

1. Qualified and Complacent
2. Qualified and Had a Bad Day

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Expectations for Participation

The only way this will be successful is to gather input from all of you. At the end of each section, you will see a slide with this sign:

When you see this, we will discuss and decide whether this is due to training/OQ or culture.

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Pipeline Safety Accidents

Royal Oak, MI

- **<u>February 27, 2013</u>:** A gas company crew allegedly ruptured a gas service line while replacing a gas main.

- The gas ignited, destroying one home and damaging at least 20 others.

- One person died as a result of the blast.

http://www.clickondetroit.com/news/Utility-crews-find-gas-main-rupture-near-Royal-Oak-house-explosion/-/1719418/19125176/-/11cj0tuz/-/index.html

Kansas City, MO

- **<u>February 19, 2013</u>:** A contractor allegedly struck a two inch gas line with an underground boring machine.
- Gas began to migrate into a nearby restaurant.
- The fire department responded to the incident approximately 45 minutes before the blast occurred, but left the scene after being told by the gas company that everything was under control.
- It took 52 minutes from the time the gas company was notified before the occupants of the restaurant were informed of the gas leak by a gas company employee and asked to evacuate.
- Seventeen minutes after the occupants of the restaurant were notified, an explosion occurred and resulted in one person killed, 15 people injured, 3 of them critically.

http://www.kpho.com/story/21343984/contractor-digging-before-jjs-explosion-did-not-have-permit

Discussion Point

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Separation Issues


STANLEY
STANLEY
30-625
MADE IN U.S.A.


SEP 13 2005

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8


01/31/2012 13:30

MAR 6 2007

South Riding, Virginia 1998

1 killed, 3 injured, 2 homes destroyed, and six other homes damaged.

Discussion Point:

Is this training and qualification?

-or-

Is this culture?

§192.325(b)

Failure to install a main with enough clearance from any other underground structure to allow proper maintenance and to protect against damage that might result from proximity to other structures.

Code of Virginia §56-257

Failure to install an underground electric utility in a manner that follows applicable industry standards such as the National Electric Safety Code and the Utility Industry Coalition of Virginia Standards by not achieving at least 12 inches of separation between the underground electric utility and a underground natural gas utility.

Protection Against Accidental Ignition

Milton, GA

- **A utility crew drilling to replace a utility pole allegedly struck a natural gas line.**
- **The resulting explosion and flames engulfed a cherry picker bucket, as well as the worker inside.**
- **The worker jumped approximately 30 feet to the ground, and suffered burns over 80 percent of his body.**

http://www.myfoxatlanta.com/dpp/news/ga-power-worker-hurt-in-gas-line-fire-071510


FOX 5
HD
5
NEWS
I-675 TO I-285
5
SEE A TRAFFIC PROBLEM? REPORT IT


APR 5 2007


KFC
DO NOT
BLOCK
DRIVEWAY


DEERE
END
UTILITY WORK


195
OVERCHARGE
USE WITH DRY CHEMICAL ONLY
FIRE X CORP
757 – 855 – 0196


VACMAS
OF DENV

Discussion Point:

Is this training and qualification?

-or-

Is this culture?

§192.751(a)

When a hazardous amount of gas is being vented into open air, each potential source of ignition must be removed from the area and a fire extinguisher must be provided.

§192.605(a) to Comply with §192.605(b)(9)

Taking adequate precautions in excavated trenches to protect personnel from the hazards of unsafe accumulations of vapor or gas, and making available when needed at the excavation, emergency rescue equipment, including a breathing apparatus and, a rescue harness and line.

Squeeze Offs


1 2 3 4 6 8 9 10 11 12 13


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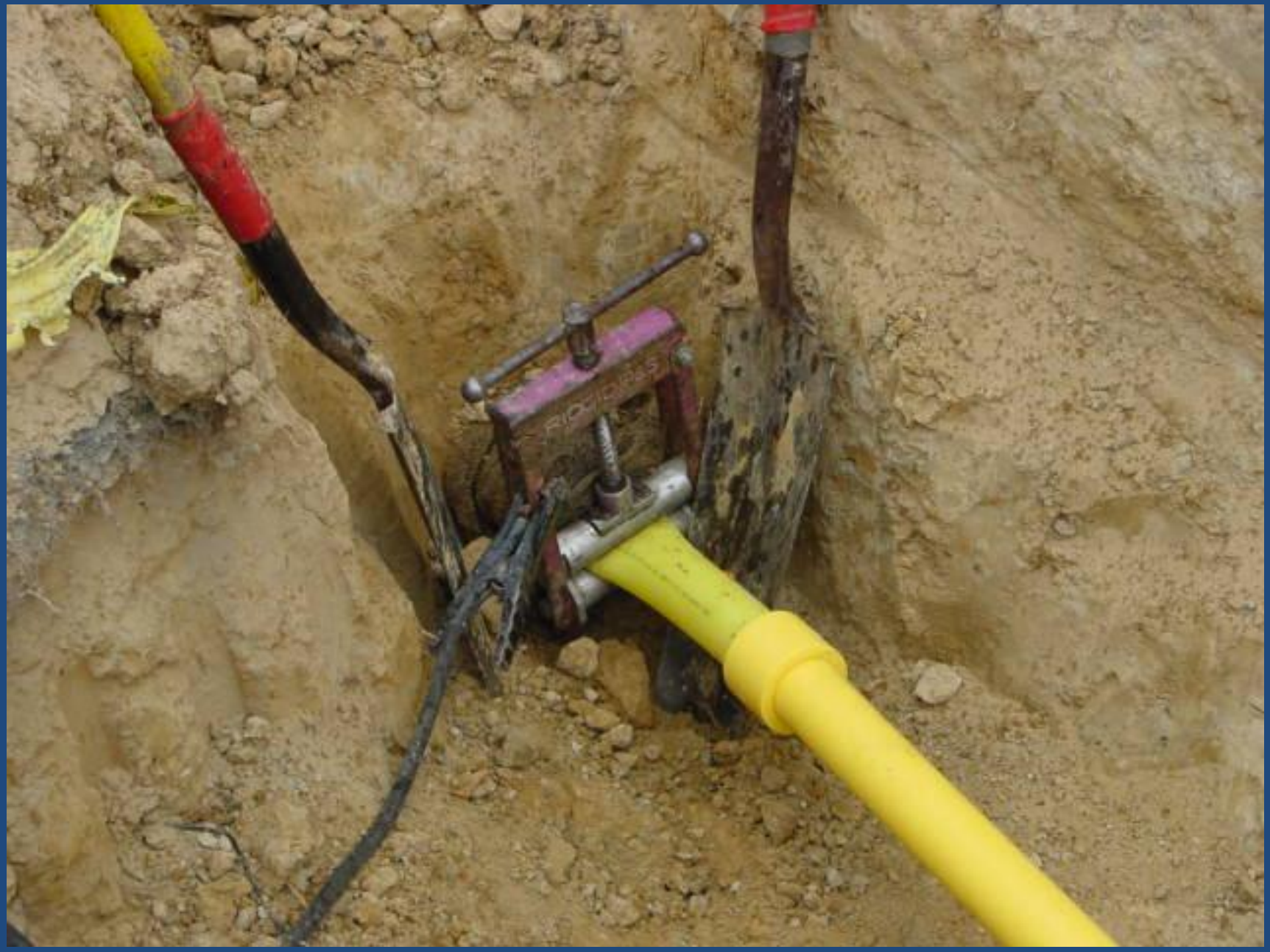
09/15/2010 12:23


09/15/2010 12:21



Discussion Point:

Is this training and qualification?

-or-

Is this culture?

Industry Standards and Pipe Manufacture's Recommendation

The squeeze-off tool must be at least 3 pipe diameters, or 12 inches, whichever is greater, away from any butt fusion, any socket, saddle, mechanical fitting, or previous squeeze-off location.

Cover


03/27/2013 10:31


08/24/2011 13:02


Lufkin

Discussion Point:

Is this training and qualification?

-or-

Is this culture?

§192.327(b)

Each buried main must be installed with at least 24 inches (610 millimeters) of cover.

§192.361(a)

Each buried service line must be installed with at least 12 inches(305 millimeters) of cover in private property and at least 18 inches (457 millimeters) of cover in streets and roads.

Backfill


06/24/2013 09:54


19 9:05 AM


19 9:05 AM

Discussion Point:

Is this training and qualification?

-or-

Is this culture?

§192.317(a)

The operator must take all practicable steps to protect each main from washouts, floods, unstable soil, landslides, or other hazards that may cause the pipeline to move or to sustain abnormal loads.

Tracer Wire


Date: 7/30/10


FLOW

Discussion Point:

Is this training and qualification?

-or-

Is this culture?

§192.321(e)

Tracer wire may not be wrapped around the pipe and contact with the pipe must be minimized but is not prohibited.

1st & 2nd Party Damages


22 11:30 AM


NO Good Cut out


Dig With CARE!
1 2 3 4 5 6
1 2 3 4 5 6 7


STANLEY®
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DEC 19 2006


DEC 19 2006

ROTA-SONIC INSPECTED — 12"-8 8 - PE
A — ROTA-SONIC INSPECTED — 12"-8 8 - PE


01/23/2013 14:43


220617
Ingersoll-Rand
185
006-18-5614
01/23/2013 14:43


01/23/2013 14:44

Discussion Point:

Is this training and qualification?

-or-

Is this culture?

Underground Utility Damage Prevention Act

§ 56-265.24. Duties of excavator

In the event of any damage to, or dislocation, or disturbance of any underground utility line including its appurtenances, covering, and coating, in connection with any excavation or demolition, the person responsible for the excavation or demolition operations shall immediately notify the operator of the underground utility line and shall not backfill around the underground utility line until the operator has repaired the damage or has given clearance to backfill…

Weak Link Use

Shear Pins


ft
in
STANLEY
MADE IN U.S.A.
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Discussion Point:

Is this training and qualification?

-or-

Is this culture?

§192.321(c)

Plastic pipe must be installed so as to minimize shear or tensile stresses.

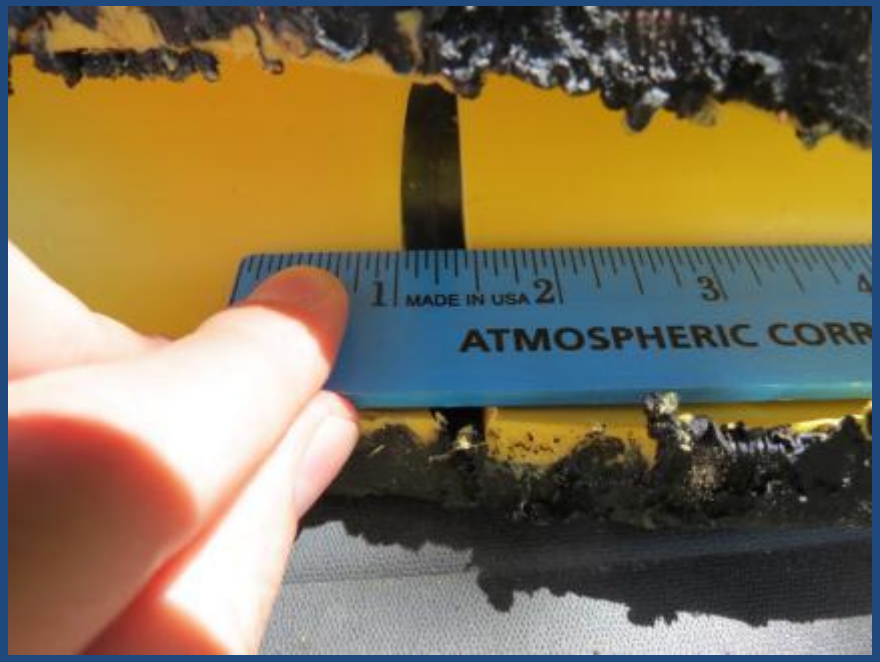
Plastic Joining Issues


CLOSE


PERMASERT
Perfection


5 12:23PM


5 12:23PM


MADE IN USA
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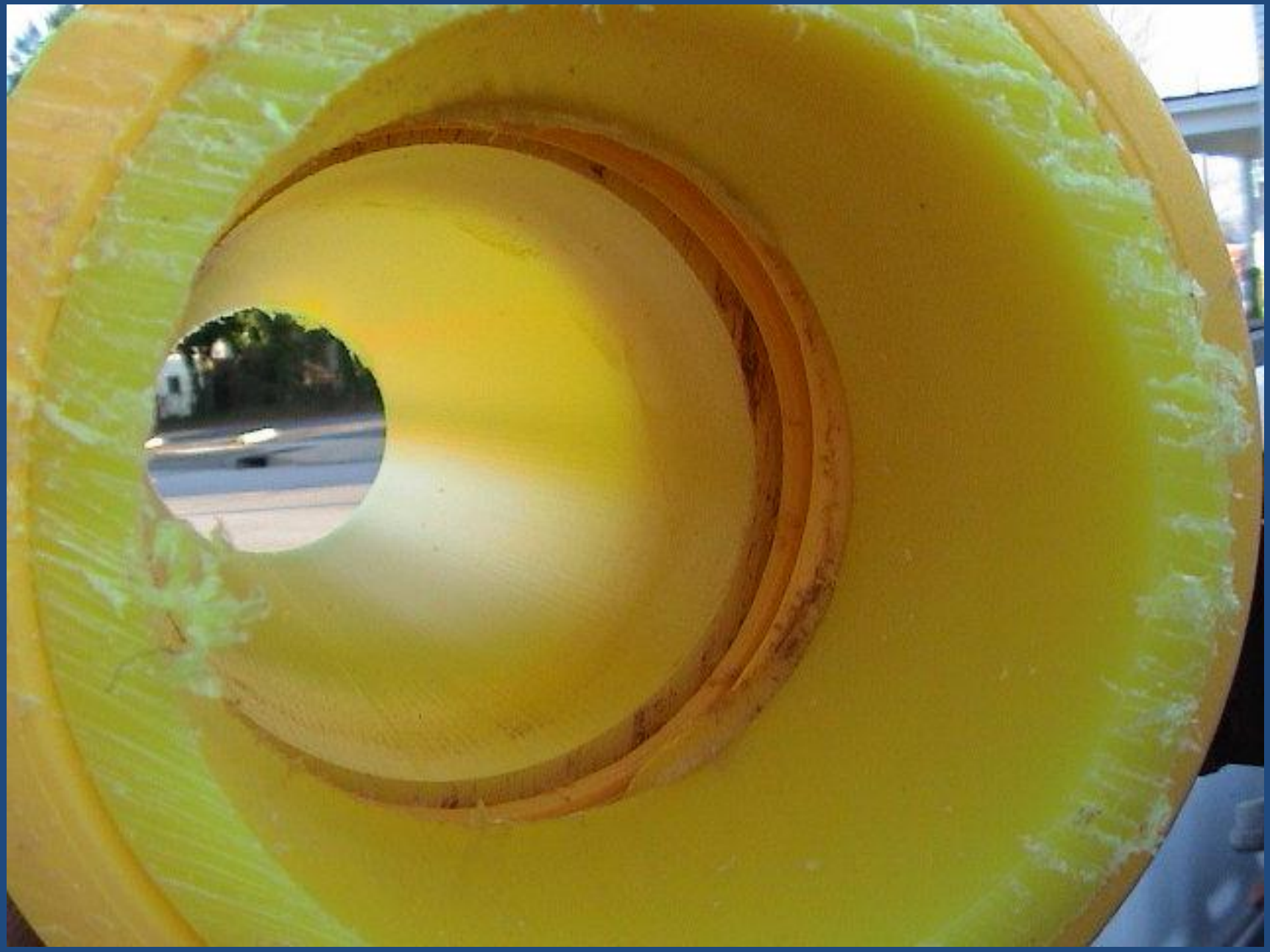


8/12 US
08/27/2012 15:11


10-5-09


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01-98
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CPN:
CY SKT REDUCER 1 1/4 X 1 CTS
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UPC
2513 CE B137.4 MADE IN USA


Dig With C.A.R.E.
Keep Virginia Safe!
1-800-552-7001


20 10:29 AM


EXTECH
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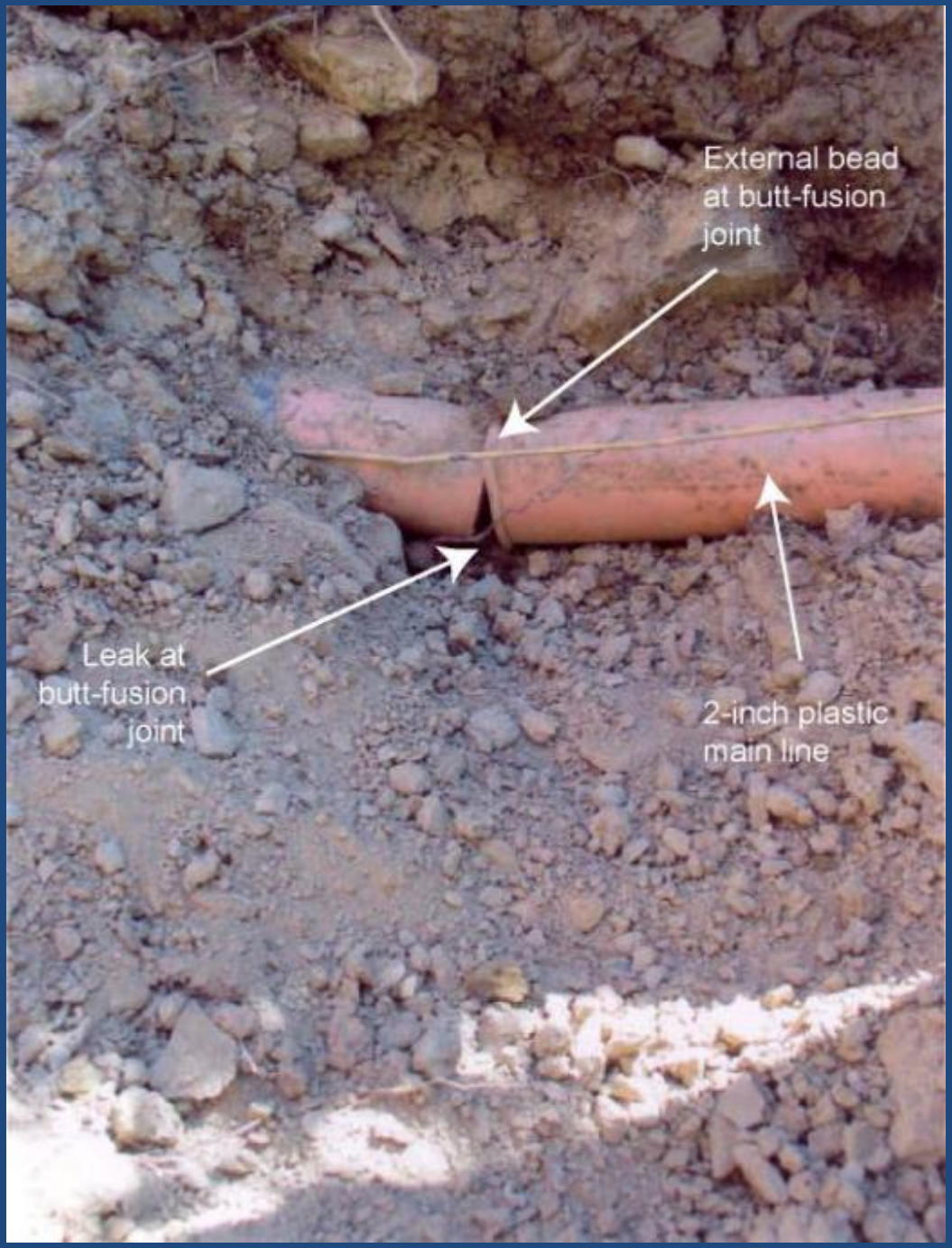
IR400

6" IPS SDR 13.5
JUN 12 2006


JUN 12 2006


DEC 8 2004


External bead at butt-fusion joint
Leak at butt-fusion joint
2-inch plastic main line

Discussion Point:

Is this training and qualification?

-or-

Is this culture?

§192.281(c)

Heat-fusion joints. Each heat-fusion joint on plastic pipe must comply with the following:

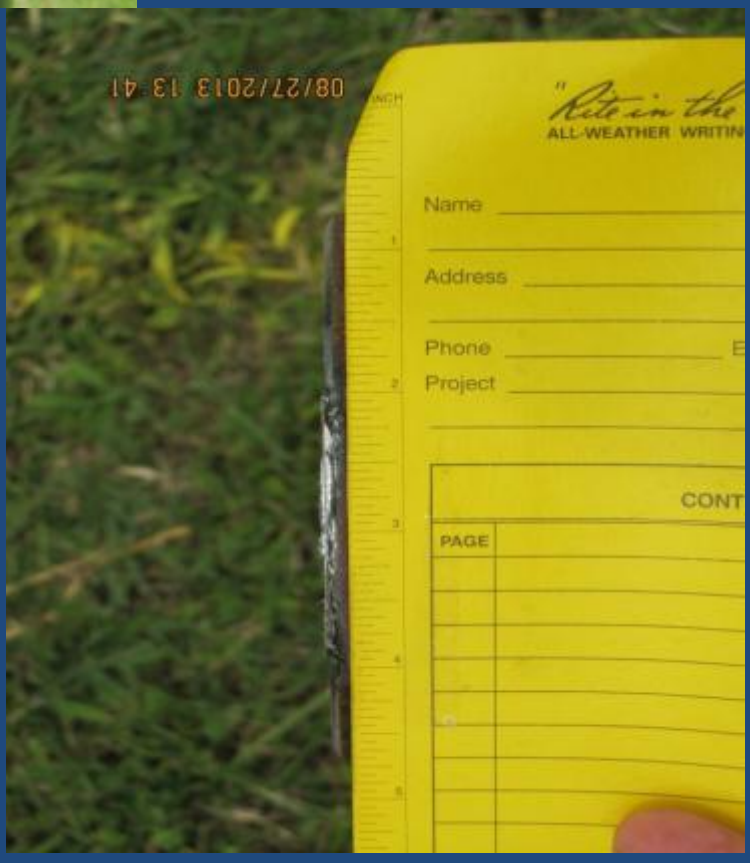
(1) A butt heat-fusion joint must be joined by a device that holds the heater element square to the ends of the piping, compresses the heated ends together, and holds the pipe in proper alignment while the plastic hardens.
(2) A socket heat-fusion joint must be joined by a device that heats the mating surfaces of the joint uniformly and simultaneously to essentially the same temperature.
(3) An electrofusion joint must be joined utilizing the equipment and techniques of the fittings manufacturer or equipment and techniques shown, by testing joints to the requirements of §192.283(a)(1)(iii), to be at least equivalent to those of the fittings manufacturer.

§192.321(c)

Plastic pipe must be installed so as to minimize shear or tensile stresses.

Welding and Coating Issues


08/27/2013 13:30


08/27/2013 13:41
Name
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06/24/2013 09:14


07/16/2013 10:28


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2002 12 19


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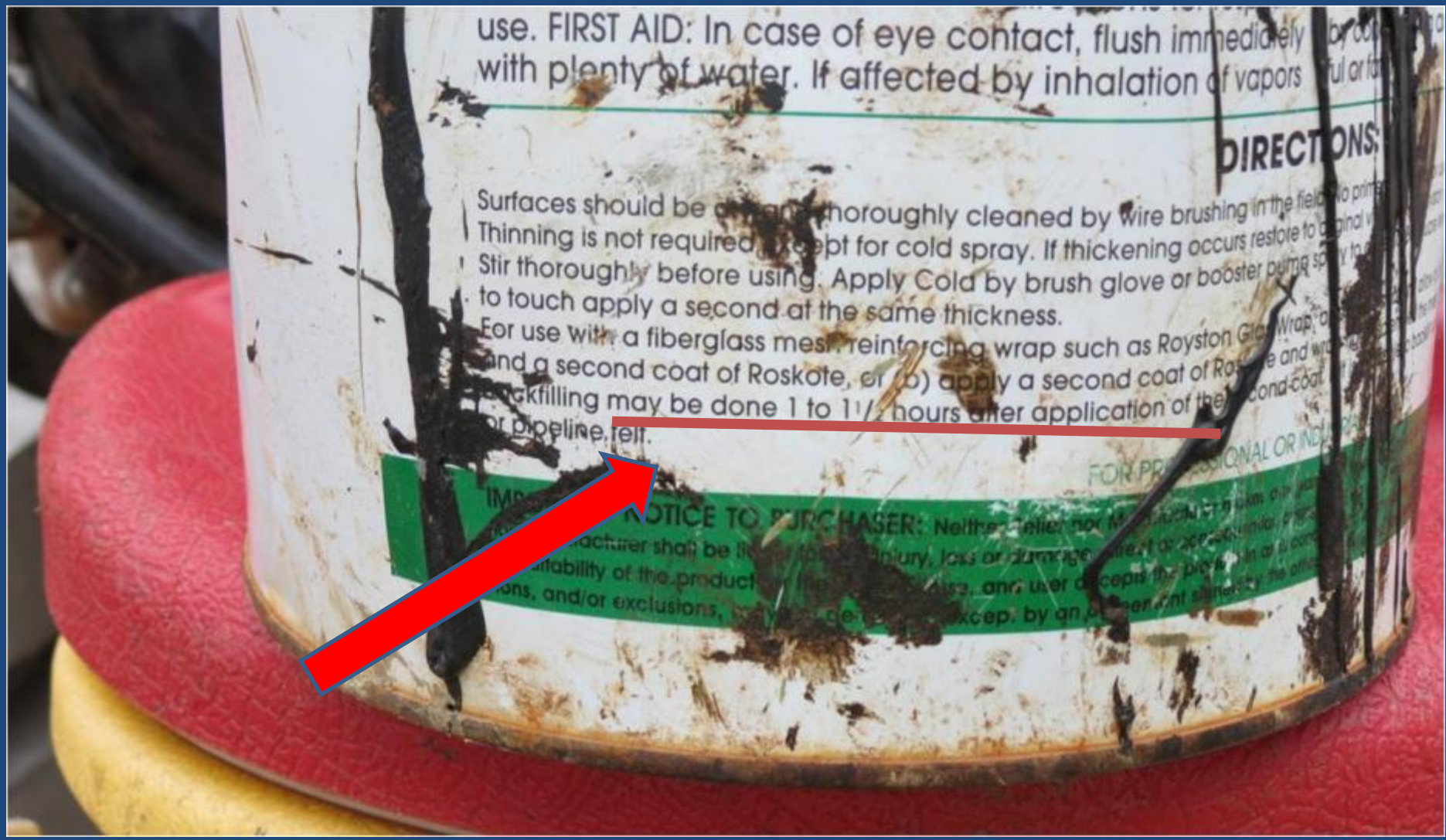
use. FIRST AID: In case of eye contact, flush immediately
with plenty of water. If affected by inhalation of vapors
DIRECTIONS:
Surfaces should be dry and thoroughly cleaned by wire brushing in the field
Thinning is not required except for cold spray. If thickening occurs restore to
Stir thoroughly before using. Apply Cold by brush glove or booster pump
to touch apply a second at the same thickness.
For use with a fiberglass mesh reinforcing wrap such as Royston Glas Wrap,
and a second coat of Roskote, or (b) apply a second coat of Ro
Backfilling may be done 1 to 1 1/2 hours after application of the
or pipeline felt.
FOR PROFESSIONAL OR IND
NOTICE TO PURCHASER:
facturer shall be
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except by an


FAIRFAX CRANE


4 1/2 FOOT


XR


REPAIR


DAMES & MOORE
INCHES
METRIC cm


DAMES & MOORE


DIESEL FU

Discussion Point:

Is this training and qualification?

-or-

Is this culture?

§192.461(a)

(a) Each external protective coating, whether conductive or insulating, applied for the purpose of external corrosion control must-

(1) Be applied on a properly prepared surface;
(2) Have sufficient adhesion to the metal surface to effectively resist underfilm migration of moisture;
(3) Be sufficiently ductile to resist cracking;
(4) Have sufficient strength to resist damage due to handling and soil stress; and,
(5) Have properties compatible with any supplemental cathodic protection.

§192.461(b)

Each external protective coating which is an electrically insulating type must also have low moisture absorption and high electrical resistance.

§192.461(c)

Each external protective coating must be inspected just prior to lowering the pipe into the ditch and backfilling, and any damage detrimental to effective corrosion control must be repaired.

§192.461(d)

Each external protective coating must be protected from damage resulting from adverse ditch conditions or damage from supporting blocks.

§192.461(e)

If coated pipe is installed by boring, driving, or other similar method, precautions must be taken to minimize damage to the coating during installation.

§192.225(a)

Welding must be performed by a qualified welder in accordance with welding procedures qualified under section 5 of API 1104 (incorporated by reference, see §192.7) or section IX of the ASME Boiler and Pressure Vessel Code " Welding and Brazing Qualifications" (incorporated by reference, see §192.7) to produce welds meeting the requirements of this subpart.

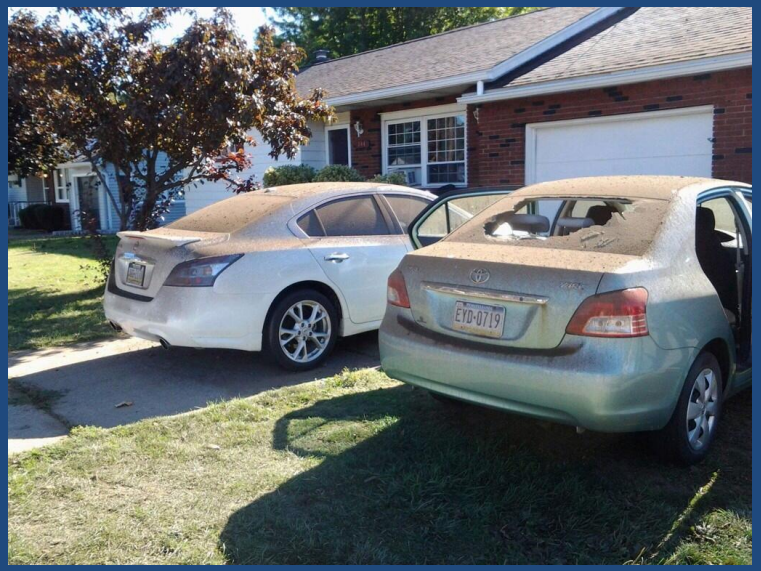
§192.235

Before beginning any welding, the welding surfaces must be clean and free of any material that may be detrimental to the weld, and the pipe or component must be aligned to provide the most favorable condition for depositing the root bead. This alignment must be preserved while the root bead is being deposited.

Pressure Testing

Taylor, PA

- A contractor was installing a gas pipeline
- Crew was pressure testing the line when the pressure caused an explosion under the road
- Two vehicles were damaged as a result of the flying debris



http://wnep.com/2013/09/18/blast-in-work-zone-shatters-windows/


EXPLOSION
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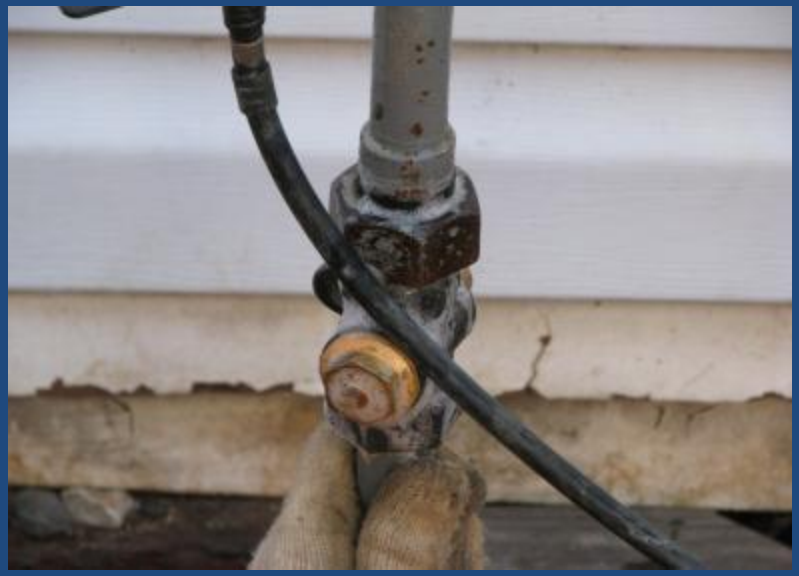
WREP HD




0
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40
60
80
100
120
140
160

Discussion Point:

Is this training and qualification?

-or-

Is this culture?

§192.725(b)

Each service line temporarily disconnected from the main must be tested from the point of disconnection to the service line valve in the same manner as a new service line, before reconnecting.

§192.513(c)

The test pressure must be at least 150 percent of the maximum operating pressure or 50 p.s.i. (345 kPa) gage, whichever is greater.


KOMATSU

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How Do We Address Safety Culture in Construction?

-When you see an issue, what do you think should be done?

-What should happen when somebody has a construction issue?

-How do you get an employee to understand the intent of safety culture and truly believe in it?

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